

*Reduction of Observations of Geographical Positions by  
Dr. Livingstone.* By Sir T. Maclear.

(From a Letter to the Astronomer Royal for Scotland.)

At present I am engaged in the reduction of a batch of observations for geographical positions forwarded to me by Dr. Livingstone per Mr. Stanley.

While Livingstone was delayed at one place, partly from illness, he observed 29 sets of lunar distances for the longitude of that place.

The distances are reduced direct by trigonometry, and where trustworthy observations for time are available, I calculate the altitudes for each mean of distance measure instead of employing his observed altitudes fore and aft. This step more than trebles the labour, but it repays in accuracy.

I am just about grappling with an important locality, where he was prostrated by illness for a length of time, and lost some three weeks of reckoning. There is no difficulty, however, in finding the day and hour (with the aid of the *Nautical Almanac*), where he observed a lunar.

He started from Unyanyembe last August (1872) to skirt the westward of the lakes he discovered, to ascertain if any of them give out rivers to the west in the direction of the Congo, as suspected by geographers at home: likewise to verify or disprove the existence of a mountain from which four great rivers emerge, one of them being the Nile. On this occasion he will be in greater danger of personal violence than hitherto, provided the news of Sir Bartle Frere's mission to the East Coast, to negotiate for the suppression of slavery, becomes generally known in the interior.

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*Spectroscopic Observations of Meteors at the Oljalla Observatory  
Hungary.* By Herr Nicolas de Konkoly.

(Communicated by John Browning, Esq.)

Last July I received a very fine meteor spectroscope from Mr. John Browning. I observed with it several meteors on the nights of the 25th and 26th of July. Before I observed with the instrument, I experimented with it on the spectra of the light of sky-rockets let off at a short distance from me, for determining the position of the lines of several gases. I regret I was not able to repeat the observations on the following night, but my assistant, Mr. Nagy, made some observations. I found three meteors give the following spectra. First: in the nucleus, the spectrum was continuous; in the train I did not see anything but the bands of sodium. The second meteor I observed gave the same spectrum as the first. The third meteor I observed, the spectrum of

the nucleus was the same as the spectrum of the first and second; but green predominated in the spectrum. The meteor itself was emerald-green. In the train I saw the sodium band, and the band in the magnesium region about 1650 of Kirchhoff. The positions of the three meteors were as follows:—

	Beginning.	End.	
12 <sup>h</sup> 34 <sup>m</sup> 23 <sup>s</sup>	{ A.R. 6 <sup>h</sup> 27 <sup>m</sup> 13 <sup>s</sup> D. + 55° 57'	{ 8 <sup>h</sup> 27 <sup>m</sup> 59 <sup>s</sup> 57° 1'	1st meteor.
12 <sup>h</sup> 55 <sup>m</sup> 0 <sup>s</sup>	{ A.R. 21 <sup>h</sup> 31 <sup>m</sup> 29 <sup>s</sup> D. + 7° 2'	{ 22 <sup>h</sup> 12 <sup>m</sup> 30 <sup>s</sup> 25° 39'	2nd „
13 <sup>h</sup> 30 <sup>m</sup> 30 <sup>s</sup>	{ A.R. 0 <sup>h</sup> 44 <sup>m</sup> 54 <sup>s</sup> D. + 3° 34'	{ 22 <sup>h</sup> 37 <sup>m</sup> 51 <sup>s</sup> 27° 12'	3rd „

The time given is mean time at the Observatory: it is 7<sup>m</sup> 24<sup>s</sup> east of Vienna.

On the 25th July Mr. Nagy observed 65 meteors; on the 26th, also 65; on the 27th, 93; on the 28th, 18; on the 29th, 49 meteors, with the meteor spectroscope: in five days 286 meteors were observed; of these, 9 were as large as *Venus*; 35 first magnitude; 53 second magnitude; 58 third magnitude; 68 fourth magnitude; 44 fifth magnitude; and 19 sixth magnitude.

August 12th, 1873.

### *Views of the Ancient Rabbins relative to the Dimensions of the Earth.* By A. D. Wackerbarth.

On the 14th of November, 1862, the Society did me the honour of reading a paper of mine relative to the history of the theories entertained in different ages concerning the spherical form of the Earth and its rotation on its axis. In that essay I endeavoured to show, that the Rabbins of the Cabbalistic School, *e.g.* the author of the *Zohar* (Simeon ben Yochai)\*, and the author of the *Imre Binah*, entertained just notions both as to the figure and rotation of our planet. I would now add that these old Jewish teachers were also in possession of a very fair approximation to the dimensions of our globe.

The Greek or Egyptian land-surveyors' cubit has been determined by Sir Henry James with (as I believe) all possible accu-

\* This truly great writer was an ascetic and recluse, who is said to have lived with his son for twelve years in a cavern, where God caused a fountain to spring up and a *Cerantia Siliqua* tree (? Bread-fruit) to grow for their sustenance. For the sake of economy in clothes they did not dress themselves till the hour of evening prayer, but, to avoid the scandal of nakedness, studied all day buried up to their necks in sand. Epoch, about that of the second temple's destruction.